



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

January 28, 2000

MEMORANDUM TO: Susan F. Shankman, Deputy Director  
Licensing and Inspection Directorate  
Spent Fuel Project Office, NMSS

FROM: James R. Hall, Sr. Project Manager  
Licensing Section  
Licensing and Inspection Directorate  
Spent Fuel Project Office, NMSS *James R. Hall*

SUBJECT: SUMMARY OF PUBLIC MEETING WITH THE NUCLEAR  
ENERGY INSTITUTE ON STANDARD TECHNICAL  
SPECIFICATIONS FOR DRY CASK STORAGE

On January 21, 2000, a public meeting was held between U.S. Nuclear Regulatory Commission (NRC) staff from the Spent Fuel Project Office (SFPO), and representatives of the Nuclear Energy Institute (NEI) and the dry storage industry to discuss NEI's proposal for standard Technical Specifications (TS) for dry cask storage. Notice of the public meeting was issued on January 7, 2000, and the meeting was held at the NRC offices in Rockville, Maryland. Attachment 1 is a list of attendees. Attachment 2 is a copy of slides that were presented by NEI. Attachment 3 is a copy of the agenda and slides presented by the NRC.

The NRC opened the meeting by noting NEI's efforts in working with the staff in standardizing TS for dry cask storage systems (DCSS), and expressed its desire to bring the issue to successful completion. NEI indicated that it considers the standardized TS issue and changes in the implementation of the 10 CFR 72.48 process to be high priority issues and has established two task forces to continue to work with the NRC staff in both areas.

A representative from Excel Services Corporation, working with NEI, then began a discussion of the development of NEI's draft report entitled, "Standard Improved Technical Specifications and Application of Selection Criteria for Fuel Storage Casks," NEI 99-06, Revision A, dated September 28, 1999. The draft report was submitted to the NRC by letter dated October 6, 1999. The design goals used by NEI in the development of the proposed standard TS (STS) for dry cask storage were that they would be defensible, easy to use, standardized, focused on operational safety and consistent with nuclear power plant TS in level of detail and safety significance.

NEI summarized its evaluation of the four criteria of 10 CFR 50.36, and how the criteria were applied to the development of draft STS. SFPO staff pointed out that the Statements of Consideration for Part 72 emphasize the need to maintain long-term fuel cladding integrity, and therefore, some different criteria may be needed for STS for dry cask storage, than the criteria developed in 10 CFR 50.36 for power reactor Technical Specifications.

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SFPO staff discussed the evolution of TS for DCSS and acknowledged that the general format of the proposed STS is patterned after the improved TS issued for the North Anna Independent Spent Fuel Storage Installation in June, 1998. The staff further described the improvements incorporated into more recent TS issued for site specific licenses and proposed for certificates under review. These improvements included a considerable reduction in the number of limiting conditions for operation (LCO), in some cases, due to their relocation to the Administrative Controls section of TS.

Regarding pending changes to 10 CFR 72.13, NEI and SFPO discussed the impact the revisions to the rule will have on requirements for TS for general licensees. Additional discussion on the issue will be held at a later date.

NEI presented its proposal for fuel specifications in Section 2.0 and a proposed LCO for a Cask Integrity Program in section 3.1 of the draft STS. SFPO indicated that more discussion of the details of the fuel specifications is warranted, and a future working-level meeting on the subject was suggested. In anticipation of such a meeting, SFPO staff have had some initial discussions on streamlining the fuel specifications, and NEI will be prepared to discuss in greater detail how the proposed methodology for determining acceptable fuel types could be implemented. With respect to the Cask Integrity Program, and the Cask Loading, Unloading and Preparation Program of Section 5.1.2, SFPO stated its desire to hold further discussions on how the programs will be controlled and inspected, and how Bases will be applied to such programs.

NEI indicated that existing regulations require general licensees to perform various analyses to confirm that existing site characteristics and facility programs are consistent with the analyses supporting the design and operation of the DCSS. To avoid unnecessary burden, NEI felt that those requirements should not be duplicated in TS (e.g., site characteristics in Section 4.0, Training programs in Section 5.0).

At the conclusion of the meeting, SFPO and NEI agreed to hold future meetings to make further progress on the issues discussed. No proprietary information was disseminated or presented at this meeting. No regulatory decisions were requested or made.

Please contact me if you wish to further discuss these issues.

Attachments: 1. Attendance List  
2. NEI Presentation Slides  
3. NRC Presentation Slides

S. Shankman

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**DISTRIBUTION:**

NRC File Center                      Public                      SFPO r/f                      NMSS r/f                      WBrach                      WHodges  
 SFPO attendees (Email)  
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<b>OFC:</b>	SFPO	E	SFPO	E	SFPO	N				
<b>NAME:</b>	JRHall	JRH	VLTharpe		CEC	Diappell				
<b>DATE:</b>	01/28/00		01/28/00		1/26/00					

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**Attachment 1**  
**Attendance List**

<u>Name</u>	<u>Organization</u>	<u>Phone Number</u>
Chet Poslusny	NMSS/SFPO	301-415-1341
Randy Hall	NMSS/SFPO	301-415-1336
Rob Temps	NMSS/SFPO	301-415-2552
Colleen Amoruso	NUS Information Services	301-255-2290
Eric Leeds	NMSS/SFPO	301-415-8540
Jerry Phillabaum	PECo Energy	610-640-6785
L. Hendricks	NEI	202-739-8109
Keith Waldrop	Duke Power	704-382-7999
Glenn Adams	Wisconsin Electric	414-221-4691
Alan Nelson	NEI	202-739-8110
Jon Kapitz	Northern States Power	651-388-1121
Wayne Hodges	NMSS/SFPO	301-415-2398
Bill Brach	NMSS/SFPO	301-415-8500
Bill Lee	NAC	770-447-1144
Susan Frant Shankman	NMSS/SFPO	301-415-2277
Mike Whitney	Maine Yankee	207-729-7871
Steve Whitsett	NAC	770-447-1144
Geoffrey Quinn	Bechtel	301-228-6352
Donald E. Carlson	NRC/SFPO	301-415-8507
Tim McGinty	NRC/SFPO	301-415-8580
Adelaide Giantelli	NRC/SFPO	301-415-3521
Brian Mann	Excel	301-984-4400
Patricia Eng	NMSS/SFPO	301-415-8577
Ross Chappell	NMSS/SFPO	301-415-8510
Donald R. Hoffman	Excel	301-984-4400
Marissa Bailey	NMSS/SFPO	301-415-8531
Suzanne LeBlanc	Consumers Energy	616-764-2288
Carl Withee	NMSS/SFPO	301-415-8534
Tim Kobetz	NMSS/SFPO	301-415-8538
Brian Gutherman	Holtec Intl	856-797-0900
Julia Myers	NMSS/SFPO	301-415-8512

**Attachment 2**  
**NEI Presentation Slides**

# Discussion of the Proposed Improved Technical Specifications for Fuel Storage Casks

Brian Mann  
EXCEL Services Corporation

## Background on the Cask ITS

- ◆ Much like the development of Technical Specifications for power plants, current Cask Technical Specifications are developed from previously approved applications
- ◆ In 1998, the NRC requested that Virginia Power develop specifications for the North Anna ISFSI site-specific license similar to the power plant Improved Technical Specifications

## Background on the Cask ITS (Cont'd)

- ◆ North Anna ISFSI license issued by the NRC in June, 1998
- ◆ NRC provided North Anna ISFSI ITS to cask vendors as a starting point for cask ITS
- ◆ Resulting specifications varied in content and level of detail
- ◆ NRC suggested the Industry develop standard Improved Technical Specifications for casks used under a CoC

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## Design Goals of the Cask ITS

The following goals were followed in developing the cask ITS:

- ◆ Defendable
- ◆ Easy to Use
- ◆ Standardized
- ◆ Focused on Operational Safety
- ◆ Consistent with Power Plant ITS in Level of Detail and Safety Significance of Requirements

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## Design Goals of the Cask ITS (Cont'd)

### ◆ Defendable

- ASLB description of the purpose of Technical Specifications

Atomic Safety and Licensing Appeal Board in Portland General Electric Company (Trojan Nuclear Plant), ALAB-531, 9 NRC 263 (1979): The Appeal Board interpreted Technical Specifications as being reserved for those conditions or limitations upon reactor operation necessary to obviate the possibility of an abnormal situation or event giving rise to an immediate threat to the public health and safety.

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## Design Goals of the Cask ITS (Cont'd)

### ◆ Defendable (continued)

- Have a solid regulatory basis
  - ◆ This issue is confused by the issuance of 10 CFR 72.13, which eliminated all references to Technical Specifications and license amendments from the portions of 10 CFR 72 that apply to general licenses and casks approved under a CoC
  - ◆ 72.13 also eliminates references to amendments to the license

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## Design Goals of the Cask ITS (Cont'd)

### ◆ Easy to Use

- Should be easy for power plant operators familiar with power plant Technical Specifications to use and understand
  - ◆ Follow the format described in the power plant ITS Writer's Guide
  - ◆ Use ITS definitions, where applicable
  - ◆ Adopt the power plant ITS "Use and Application" sections with minimal changes

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## Design Goals of the Cask ITS (Cont'd)

### ◆ Standardized

- Craft a single standard set of Technical Specifications that could be used with any cask design
  - ◆ This facilitates the use of multiple cask designs at a facility
- Accommodate design differences by writing requirements in terms of underlying safety function

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## Design Goals of the Cask ITS (Cont'd)

### ◆ Focused on Operational Safety

- Include requirements necessary to prevent operation which represents an immediate risk to the health and safety of the public
- Requirements not directly related to operational safety should be located in other documents
- Do not duplicate regulatory requirements
- Do not include manufacturing requirements

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## Design Goals of the Cask ITS (Cont'd)

### ◆ Consistent with Power Plant ITS Level of Detail and Safety Significance of Requirements

- Power plant experience established a threshold for the level of detail in the ITS and the safety significance of the items included
- Need to maintain a balance of oversight and operational flexibility

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## Criteria for Inclusion in the ITS

### 10 CFR 50.36 ITS criteria (paraphrased for casks)

- ◆ Criterion 1 - RCS leakage is not applicable to casks
- ◆ Criterion 2: A process variable, design feature, or operating restriction that is an initial condition of an accident or off-normal event that either assumes the failure of or presents a challenge to the integrity of a fission product barrier
- ◆ Criterion 3: A structure, system, or component that is part of the primary success path and which functions or actuates to mitigate an accident or off-normal event that either assumes the failure of or presents a challenge to the integrity of a fission product barrier
- ◆ Criterion 4 - PSA is not applicable to casks

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## Application of Criteria to the existing Technical Specifications

- ◆ Applied the criteria and design goals to the current versions of the Technical Specifications for the :
  - Hi-Star 100
  - TN-32
  - NAC-MPC
  - Wesflex
- ◆ Generated a disposition matrix for each design
- ◆ Marked up and justified the changes to each design

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## Relationship Between the Cask Technical Specifications, the SAR, and 10 CFR 72

- ◆ General license user required by regulations to verify many SAR parameters are met:
  - Storage pad design      ALARA
  - Site parameters          Offsite dose limits
- ◆ Verify no USQ, and verify that the emergency plan, and the QA, training, and rad protection programs are adequate
- ◆ Regulations specify that activities must be performed under procedures
- ◆ Not necessary to specify these requirements in the Technical Specifications

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## Design Decisions

- ◆ Section 1.1
  - Use of the term "CASK"
  - Did not define terms which appear in only one specification
  - Did not define vendor specific terms
  - Did not include operating conditions
- ◆ Sections 1.2, 1.3, and 1.4
  - Followed power plant ITS closely
  - Did not include features not used in cask ITS
  - Did not use vendor specific terms

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## Design Decisions (continued)

### ◆ Chapter 2.0

- Struggled with standardization
  - ◆ Different features are important for different casks
  - ◆ Varying level of detail in various cask technical specifications

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## Design Decisions (continued)

### ◆ Chapter 2.0 (continued)

- Focused on the Facts
  - ◆ The information presented in Chapter 2.0 is a subset of the information in the SAR
  - ◆ The General License holder is required by regulation to ensure that the conditions set forth in the CoC, including the SAR, are met
  - ◆ All changes to the SAR are performed under 72.48
  - ◆ The power plant ITS contains only general descriptions of fuel design parameters, even though the risk posed by the fuel to the public is substantially higher
    - This is acceptable because the safety analyses which rely on these fuel parameters are in the SAR

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## Design Decisions (continued)

### ◆ Chapter 2.0 (continued)

#### ■ Result

- ◆ Do not need to specify fuel parameters in Chapter 2.0 – adequate control is provided in the SAR
- ◆ With new 72.13, do not need Functional and Operating Limits

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## Design Decisions (continued)

### ◆ Chapter 3.0

- Followed power plant ITS closely
- Did not include features not used in cask ITS
- Did not use vendor specific terms
- Used place holders to assist power plant operators in using the specifications

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## Design Decisions (continued)

### ◆ Section 3.1 Specifications

- ITS does not lend itself to process description
  - ◆ End up with "cascading" Frequencies and mandatory Action entry
  - ◆ Exit Applicability, and LCO, when taking actions
  - ◆ Moved processes to programs in the Administrative Controls section
    - CASK Loading, Unloading, and Preparation
    - CASK Transportation Evaluation
    - CASK Storage Integrity
  - ◆ Program format lends itself to processes

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## Design Decisions (continued)

### ◆ Specification 3.1.1 – Storage Integrity

- A cask on the storage pad has only one safety function
  - ◆ Not to leak
- Determining integrity is cask design dependent, but all have a method
  - ◆ Retained the requirement and the actions, but moved the specifics to a program
- Pulls in the requirements for loading, unloading, and storage

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## Design Decisions (continued)

### ◆ Design Features

- Kept placeholder in the proposal to meet 72.44
- With new 72.13, should be deleted

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## Design Decisions (continued)

### ◆ Items not retained in Design Features

### ◆ Codes and Standards

- Codes and Standards are inappropriate for inclusion in the Technical Specifications
  - ◆ They are not operating limits
  - ◆ They are not in the control of the general license user
  - ◆ They are described in the SAR and can be adequately controlled under 72.48

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## Design Decisions (continued)

### ◆ Items not retained in Design Features

#### ■ Site Specific Parameters and Analysis

- ◆ 10 CFR 72.212(b)(93) requires the user of the cask to review the SAR and the SE to ensure the reactor site parameters envelope the cask design bases
- ◆ 10 CFR 72.21(b)(3) requires a written evaluation of the storage pad and areas

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## Design Decisions (continued)

### ◆ Administrative Controls Programs

- What's a program?
- An Administrative Controls program contains requirements for a licensee-developed and implemented program
- The cask vendor will place the limits, setpoints, time limits, and acceptance criteria for the programs in Chapter 12 of the SAR
- The cask vendor will provide the general licensee with model procedures
- Changes to the SAR information and the general licensee procedures must be made under 72.48

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## Design Decisions (continued)

### ◆ Programs (continued)

- PROGRAM ADVANTAGE: Allows design specific information to be maintained in the SAR and the Technical Specifications to contain only the design independent safety function requirements
- Without a mechanism like programs to contain the design differences, can be no "standard" ITS for casks

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## Design Decisions (continued)

### ◆ Programs

- Need a Radioactive Effluent Control Program to meet 72.44(d)
- Cask Loading, Unloading, and Preparation Program includes requirements on drying, inerting, leak testing, dose rates, contamination, fuel temperature, and boron concentration in the SFP
  - ◆ The program requires compensatory measures and time limits on how long a cask can be in an intermediate state
  - ◆ This provides the same control as the 8 specifications in the NAC-MPC Technical Specifications, but without the conflicts created by the specification format

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## Design Decisions (continued)

### ◆ Programs

- Cask Transportation Evaluation Program
  - ◆ Includes maximum lifting height, road conditions, minimum temperatures, etc.
- Cask Storage Integrity Program
  - ◆ Describes the requirements for monitoring of cask storage integrity
  - ◆ Specifics contained in the SAR

### ◆ Reports

- Contains description of the report required by Specification 3.1.1

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## Design Decisions (continued)

### ◆ Items not retained in the Administrative Controls

- Training
  - ◆ Training is required by 72.212(b)(6).
  - ◆ Repeating the requirement adds no value
- Requirements on first system placed in service
  - ◆ This is inappropriate for a standard Technical Specification as it only applies to the first user

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## Design Decisions (continued)

### ◆ Bases

- Drafted Bases for the ITS
- Because 72.48 does not describe Bases, recommend retaining the Bases in Chapter 12 of the SAR and controlling under 72.48

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## Conclusion

- ◆ The proposed cask ITS provides the NRC adequate control of cask operations to give assurance that there is no undue risk to the public health and safety
- ◆ The proposed cask ITS meets the primary design goal of developing a single standard for cask Technical Specifications
- ◆ The proposed cask ITS provides the manufacturer and the general license user sufficient flexibility to perform cask operations

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**Attachment 3**  
**NRC Presentation Slides**

**NRC/NEI Meeting on Standard Technical Specifications (STS)  
For Dry Cask Storage  
January 21, 2000  
Agenda**

- 1. Introduction - Opening Remarks (NRC/NEI)**
- 2. Discussion of Rationale and Process for Development of Industry Proposed STS (NEI)**
- 3. Evolution of TS Content (NRC)**
- 4. NRC Feedback on Proposed STS Format and Content (NRC)**
- 5. Criteria for Including Information in TS (NRC/NEI)**
  - Meeting Key Aspects of Part 72 (NUREG-1536)**
  - Minimum Set of Fuel Parameters Included in Issued TS**
  - Criticality Effect on Key Parameters**
- 6. Areas of Consideration for Further TS Changes**
  - Fuel Related Hardware Specifications**
  - Radiation Protection Specifications**
- 7. Industry Perspectives and Initiatives**
  - Identification of Existing TS With Operational Impacts and Minimal Safety Contribution**
  - Suggestions on Different Ways to Describe Bounding Specifications**
  - Identification of Additional New Specifications to Add Flexibility**
- 8. Break/Caucus (As Necessary)**
- 9. Meeting Summary and Plans for Subsequent Actions and Meetings**

# **EVOLUTION OF PART 72 TECHNICAL SPECIFICATION CONTENTS**

- **Pre-SFPO:**

- Old-style Technical Specifications
- 18 to 20 TSs with LCOs per design

- **Summer 1998:**

- Implemented improved TS format for North Anna ISFSI

- **Fall 1998 to Present:**

- Implemented improved TSs for Holtec, NAC and TN casks
- Implemented improved TSs for TMI-2, Trojan ISFSIs
- Reduced number of LCOs, relocation to Admin Controls

- **April 1999 - NRC/NEI TS Workshop:**

- Industry/NEI participation in standardization of cask TSs
- Discussion of criteria for inclusion in Standard TSs

- **October 1999:**

- NEI proposal for improved TSs for spent fuel storage casks



# NUREG-1536

## “Standard Review Plan for Dry Cask Storage Systems”

### Defines these basic or fundamental safety criteria:

- maintain **subcriticality**
- **prevent release** of radioactive material above acceptable amounts
- Ensure that **radiation rates and doses** do not exceed acceptable levels
- Maintain **retrievability** of the stored radioactive materials throughout the life of the dry cask storage system

### Chapter 12.0, “Conditions for Cask Use - Operating Controls and Limits or Technical Specifications,” states:

“...the pertinent SAR sections must identify and support the Technical Specifications deemed necessary to maintain **subcriticality, confinement barrier integrity, shielding and radiological protection, heat removal capability and structural integrity under normal and accident operations.**”